

MEMORANDUM

To: Kitsap County Board of County Commissioners

From: Eric Baker, Policy Manager

Subject: Lake Management District No. 3 for Long Lake: Special Benefits from Lake Management Activities and Potential Impacts to Property Values from Toxic Algae Blooms

As part of the development of the proposal for Lake Management District No. 3 for Long Lake, Kitsap County was responsible to determine proper techniques for treating lake water quality issues and assessing the benefits of these activities to property owners within the district boundary. The information below details the expected maintenance techniques, estimated outcomes and special benefits to property owners from the activities.

ISSUE

Long Lake has for decades been faced with water quality issues that have led to the wide spread growth of aquatic vegetation and toxic algae blooms. The sources of Long Lake's water quality problems are primarily from excess phosphorus. Phosphorus is a key nutrient to plants and algae and, in excess, causes algae blooms and increased plant growth. The sources of this phosphorus come from the historical lake sediments (legacy phosphorus), aquatic plants, soils around the Lake and decades of land uses near the Lake and within the watershed (fertilizers, failing septic systems, impervious surfaces etc.).

Blue-green algae blooms (cyanobacteria) can be extremely toxic to pets and humans, especially children. These blooms can cause rashes and other skin irritation, respiratory problems, nervous system reactions and other severe health concerns. This algae can be harmful if it comes in contact with the skin or ingested, but also, in certain cases, some toxins can become airborne and inhaled through breathing. Blue-green algae blooms have led to deaths of many dogs and other pets around the region and anecdotally, in Long Lake itself. Long Lake has been closed by the Kitsap Public Health District on numerous occasions due to these blooms. The potential impacts these algae blooms and the presence of them in Long Lake are detailed in the Kitsap Public Health District summary dated March 27, 2017.



Additionally, aquatic plants grow towards the surface of the lake to get sunlight. As these weeds near the surface in significant quantities they can ensnare the arms and legs of swimmers, impede water skiers and become entangled in boat propellers and engine components. At the same time, the prolific production of plants in Long Lake have grown very dense and, when aquatic plant density is too great, it reduces the quality of aquatic habitat for fish and other organisms. Additionally, these weeds, as they go through the natural growth cycle, pump additional phosphorus into the water, which fuel weed growth and increase the probability of toxic algae blooms.



PROPOSAL

The lake management district proposal included a scope of work for maintenance activities totaling \$470,000 over a 5-year period. As fully detailed in the *Long Lake Integrated/Adaptive Lake Management Plan, July 2016*, these activities will include, but may not be limited to:

- Long-term water quality monitoring
- Phosphorus inactivation through sediment large treatment and annual water column stripping
- Aquatic plant management
- Planning and permitting of maintenance activities
- Public education and outreach through public meetings and school programs
- Overall project management and transparent reporting.



These strategies have been employed a numerous lakes regionally and nationwide.

The intended outcomes of these proven activities are to:

- Reduce, if not completely remove, the frequency of toxic algae blooms that create a public health hazard.
- Limit aquatic vegetation growth to the detriment of shoreline properties and recreational use of the lake.

As shown in the *Final Report on Water Quality 2006-2010, December 2010*, the application of these strategies improved water quality conditions in Long Lake from 2006-2010.

ASSESSMENTS

State statute 36.61.160, requires any special assessment to properties within a lake management district to be equal to or less than the special benefit the properties receive from the proposed management activities. These benefits can be the maintenance of the residential, recreational and/or aesthetic features of the properties to avoid negative impacts to property values.

Several studies have been conducted nationwide showing stark reductions in property values on lakes with toxic algae blooms also known as harmful algae blooms or HABs. Kitsap has reviewed literature regarding the dangers of these HABs and their impacts to shoreline property values. Reductions as high as 30-50% were found to shoreline properties where HABs have affected water quality to dangerous levels.

In the study *Bloom and Bust: Toxic Algae's Impact on Nearby Property Values*, 2016, the authors conducted a national review with a specific area of study of HABs in multiple areas of Ohio.

As a result of both health warnings and aesthetic concerns, the general public has taken notice of deteriorating water conditions associated with harmful algal blooms (HABs). Lakeshore residents across multiple states have reported anecdotal evidence of significant declines in their property values with some even suggesting a 30-50% drop due to the presence of HABs (Arenschield 2015, Oct; Rathke 2015).

Using a detailed, multi-lake hedonic analysis across 6 Ohio counties between 2009 and 2015 we show capitalization losses associated with near lake homes between 12% and 17% rising to over 30% for lake adjacent homes.

For a specific example, this study evaluated a property of Great Lake Saint Mary's:

Using estimates from Table 5, we compute the total capitalization for GLSM due to algal conditions surpassing the 1 ug/L WHO threshold. Using the average value of a house located within 500 meters of Grand Lake Saint Marys of \$132,327, we estimate the loss per house to be \$17,619.

This example shows a 13.3% loss in property value based on deteriorated lake water quality leading to HABs.

In the study *Economic Benefits of Reducing Harmful Algal Blooms in Lake Erie*, October 2015, the authors focused on the potential impacts of HABs on multiple counties surrounding Lake Erie.

Taking some values from the literature on the percentage impact that environmental harms can have on property values serves to illustrate the magnitude that damages from Lake Erie HABs might be: a 5 percent impact to near-shore values and a 10 percent impact to shoreline properties results in \$242.1 million in property value impacts.

In an article from the Burlington Free Press entitled *Algae Drives Down Lakeside Property Values*, August 29, 2015, properties along St. Alban's Bay showed a property value reduction of approximately \$50,000 per parcel. Thus, these properties, valued up to \$221,000, saw a decrease of, at minimum, 22.6%, at that time.

CONCLUSIONS

Based on the review above, Kitsap County finds the following:

- The proposed lake management district will use a maintenance strategy that has shown documented benefits regionally and locally in addressing lake water quality issues leading to harmful algae blooms (HABs).
- National studies have shown a wide range of property value impacts (10 to 50%) to shorefront properties from reduced lake health and HABs.
- Based on these studies, Kitsap County used the most conservative estimate of impact at 10% of overall property value.
- Kitsap County used 2017 assessed values as determined by the Kitsap County Assessor's Office as a conservative estimate of overall property value.
- Kitsap County assessed the median property value of properties within the lake management district to remove any undue impacts from high-value or low-value homes on the evaluation of special benefit.
- The special benefit to properties within lake management district boundary, greatly exceeds the proposed special assessment.